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Introductory Chapter: Active Learning—Beyond the Future

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1. Introduction

1.1. Objectives and preoccupations

More than a new knowledge form, active learning is a tool that opens us the future doors of scientific research appointing for the increment of the potential intelligent machines [1]. The active learning permits us to get research competencies, namely problem-solving, and uses several types of strategies [2], very useful for the one who wants to be creative and be more acumen in using teaching techniques like data visualization [3], and at the same time, test them according to an established task path such as: active comprehension and active production [4]. On the other hand, active learning empowers our relationship with the technology and gives us more understanding and domination with our relationship with data [5] and with the active learning algorithmic practice [6]. This relationship extends to the organizational practice, where active learning develops environments conducive to business practice [7] and reinforced by the online context [8], reducing the time of treatment and data interpretation and translating into a significant improvement in the review and design of financial, social and commercial scenarios, and strategies. Therefore, we are dealing with a very practical and very motivational way of knowledge transmission [9] and to increase interest in various subjects [10] namely in practicing medicine [11] and to choose collected data about informal nonhuman aspects for human condition explanation [12] combining soft and technical skills with physical activity to improve the performance [13] and using technology kits to increase experiences and increase the subjective knowledge [14].

In addition, in classrooms in Tomar, Portugal, we set active learning team, tasks representing their self-mastery of knowledge being inside the indoor and outdoor work contexts. Following that, we tried to define and explore the concept of active learning through references about

active learning increasing self-confidence and problem-solving in strategic scenery, and to measure active learning with development tasks and presentations. The above studies have the dual purpose of investigating the issues and extending them to different types of populations.

1.2. Research methods

There are many forms and techniques to apply active learning and increase the students which increase students' ability to systematize and consolidate knowledge. So, we use the following active learning techniques for case study active learning strategy [15]:

1. preparation for the debate [16]
2. teamwork [17]
3. exposition and communication [18]
4. preparation for improvisation [19]
5. ability to argue [20]
6. involvement in the activity [21]
7. problem-solving [22].

Meanwhile, these techniques have been reinforced with Organizational Development techniques practice, during the discipline development [23] as it follows:

1. Training-group (an interactive technique where people learn from each other, the best-known technique is the psychodrama) [24].
2. Team-building (use of intervention different types that enhance social relationships and clarify the roles of group members, one of the known techniques is outdoor) [25].
3. Delphi technique (use of an experts group to compare unstructured or individual groups) [26].
4. Technique of help interview/consultation (consultation process—technique of psychological interview) [27].
5. Force-field analysis technique (the technique of events diagnosis for results optimization) [28].
6. Confrontation group technique (a technique that means having the courage to tell a person what they have seen or heard, to show that they are worried about them and to suggest that they are willing to help) [29].
7. Data feedback technique (data feedback—ability to give and receive opinions, criticisms and suggestions about our attitudes, behaviors, and/or performances, with the purpose of reorienting and/or stimulating a particular individual or group action) [30].
8. Third-party technique (the third party—is a procedure for the resolution of controversies—is one of the alternative methods to classic judiciary litigation), [31].

9. “All at the same time in the same room” technique (getting the whole system in the room—streamlining communication for the whole organization) [32].
10. Grid organization development technique (detection of personality styles in relation to task and relationship) [33].
11. “Transactional analysis” technique (studies and analyzes the exchanges of stimuli and responses, or transactions between individuals) [34].
12. World café technique (flexible, sensitive, and powerful process for generating collaborative dialogs between individuals, in which they can share their knowledge and discover new opportunities for joint action) [35].
13. Open space technology technique (how to gather people in a conference, retreat, or meeting) [36].
14. Sensitivity laboratory technique (temporary residential community, structured according to participants’ learning requirements) [37].
15. E-learning technique (formation in O.D. from distance) [38].
16. Consulting techniques in O.D. (assumed forms of paper by the consultant), [39].

1.3. Preliminary results

Based on active learning techniques, we proposed those that justified the link between revealed autonomy and the ability to solve problems in a strategic scenario, in our theme, case study resolution, and the results achieved with tasks execution and presentations. Several contributions try to explain advantages, constraints, and active learning utility, on this book that we divide in to three sections:

1. Active learning properly: where we talk about the concept humanization, namely the relation with learners and the active learning practice implementation focusing cases.
2. Technologies and active learning: where we talk about the use of technology in the active learning, its boundary between technology and learners, with the inherent advantages and some constraints provoked by what the change brought about the challenges of this new knowledge approach.
3. Related trends: where we talk about the future of active learning in an ethical-pedagogical approach, ending in its entrepreneurial character.

In the first section, we begin with an excellent article from PdD Radwan Akran, about active machine learning use where, in a clear explanation, he conveys to us this technique knowledge, taking, in particular, into account, increasing in teaching and learning. At the same time, he showed us how the humans learn faster with better performance when they can actively select the informative instances from a pool of unlabeled data instead of random sampling, and discuss the challenges that this technique has to win.

Following, we have another interesting article from the Dr. Sewagegn Abatihun Alehegn and Dr. Boitumelo M. Diale, who presents us a learners’ role empowerment scenario, where they achieve competencies using active learning, a focus on student-centered teaching and skills.

On the path of what we deal with in this section, we have a fabulous article from Prof. Yamada Reiko that offers an overview of an introduction case about the use of active learning methodologies in higher education program, in Japan, revealing the achieved success factors.

We complete this section with a great article from prof. David Johnson about cooperative learning, which reveal us the adaptability of this methodology in adaptation by small groups, achieving effective results. Thus, he reveals us the focus on cooperative learning theories, types and behaviors, implicit in this technique he offers us an extraordinary practice to master and apply the knowledge.

In the second section, we have a set of investigations that present us with an extraordinary dynamics in the practical active learning approach in the future direction based on information and communication technologies.

According with that, Dr. Abdolrezapour Pariza shows us a computer mediation active learning activities with good results in students' performance, an excellent experimental work that translates very satisfactory results to face this type of learning as the future dynamics in the knowledge acquisition and application.

Continuing with this section, we have another good example with the contribution of Dr. Aouag Sofiane regarding an innovative approach for renewing instructional design focus with a precision microinstructional engineering design, in an innovative way, that transports us into a new world.

The section concludes with an excellent and visionary article by Dr. Mario Barajas that points us to the future orientation of active learning, and it also points out that creativity in conjunction with digital technologies contributes to students' enrichment competencies, in particular, creative competencies.

The third section addresses issues related to active learning namely social dilemmas, coaching strategies and entrepreneurship. In the first article, Dr. Bishara Saied gives us a strong and appellative work about the form that the teaching counselors must deal with students with disabilities, researching for an active way to solve several dilemmas.

Drs. Enisa Mede and Kivılcım Vermez present an excellent case study on a coaching process to enrich the skills of new teachers in order to be able to teach actively.

We end the section and the book with a spectacular chapter by Dr. Emete Toros about female entrepreneurship that, through active factors and personality traits, develops active learning to create their own businesses and professions.

2. Body

2.1. How to apply and measure the active learning into the classroom

The active learning strategy put into practice is the case study in the use of in organizational change and intervention techniques [24–39, 40]. The students organize in groups and begin

to investigate a given case study with the teacher supervision, when applied a set of O.D. methods and techniques in a change process follow-up participation [41] and organizational intervention [42], for presenting in a short space of time, in the classroom. The students, doing the investigation consult several sources (books, videos, HRM consulting sites, technical and scientific articles, and other documents), being that the final result is intended to illustrate the knowledge obtained by the student through this process.

The case study strategy has the following structure:

1. Theoretical foundation
2. Technique nature and objective
3. When and to whom the technique is directed.
4. Consultant role.

3. Technique development and process

The students must represent O.D. consultant roles [43], in practical presentation examples, which can be real or created, presenting the situation that leads to the intervention, also justifying the technique utility for the presented situation and how it should be applied.

The work is measured in a way inspired by a case base learning Blooms Taxonomy [44] where students are evaluated according to a punctuation of 0 to 20 points in each technique with weighted scale in each executed techniques either, that we mention again:

1. Preparation for the debate [16]. Student's efforts in the sense to obtain relevant consistent data for their fundamental speech in order to confront other speeches from other students, about some case or cases, for getting a solid argumentation to confront doubts, facts, and tendencies revealed (10% weight).
2. Teamwork [17]. Means students organization capacity support themselves, helping each other by motivating, cooperating and communicating, addressing risk scenarios, and taking decisions about their resources in competition according to their own means, where they synergistically take attitudes to win the challenges (20% weight).
3. Exposition and communication [18]. Students draw a proposal about their investigations, questioning critically, arguing, and seeing beyond the future, and own interests or ideologies, giving and asking for feedbacks, creating a positive and constructive speech, changing experiences, and potentiating the speech (20%weight).
4. Preparation for improvisation [19] and ability to argue [20]. Students search additional opportunities to speak and write in ways that convey the essence and significance of their research clearly and accurately. They search networking possibilities that could help in their guidelines to speak in an associative way the several and different subjects, and use a strategy for defending subjective constraints to what the others consider appropriate, who is mistaken for sense and the ability to demonstrate the existing differences and diversity (30%weight).

5. Involvement in the activity [21]. Students do a transformational form involve them on practice, searching references, and doing experiences and categorize data samples, discussions, results, and conclusions, during the investigation timeline, complying with all determinations made between everybody compromised (10%weight).
6. Problem solving [22]. Students develop a wide range of ideas with flexibility and resources, according to a well-defined problem, to solve in a creative form (10%weight).

Considering the highest score of each technique, we obtain a profile according to the respective techniques, therefore:

1. Organizer [45]: a student that can obtain communication planning competencies to meet the interlocutor's needs and expectations, namely student colleagues in the classroom social dynamics. The students receive highest punctuation in preparation for debate.
2. Collaborator [46]: a student who improves the study questions, brings experimental knowledge, establishes trust among the colleagues, helps you search for data and interpret it laterally, assists colleagues in collective learning processes, from various perspectives, and to check that the analysis seems appropriate. The students receive highest punctuation in teamwork.
3. Communicator [47]: a student who delivers dialogs with logic conducting the others to generate communicational attitudes, which discloses information on change, in an appropriate manner, seeks to learn from peers and to help those improve their ability to provide answers, and helps them to be able to confront the criticism and manipulation, indicating clues for searching solutions to improve the dialog. The students receive highest punctuation in exposition and communication.
4. Improviser [48] and arguer [49]: a student who uses spontaneously and creatively his talent to explore unusual issues and makes unplanned decisions, helping her colleagues to solve problems, taking critiquing decisions. The students receive highest punctuation in preparation for improvisation, and use rhetoric and other modes of argumentation and discursive strategies helping others to develop empathy characteristics with their dialogues and provide transparent forms of explanation regarding the issues. The students receive highest punctuation in preparation for improvisation and ability to argue.
5. Committed to work [50]: a student makes inquiries and uses independent and creative thinking skills helping others in the same way to get more results from the workflow and never gives up the flow. The students receive highest punctuation in involvement in the activity.
6. Problem solver [51]: a student who shares interests, resilience, immersions, with other colleagues in team activities toward a solution, a strategy, and an objective, to solve a problem and overcome challenges. The students receive highest punctuation in problem solving.

Other scores (maximum score) are intended to differentiate from each other independently of the obtained profile.

This profile is not inflexible, depends from many human factors in a task development, and from previously acquired competences, but it will not have a restrictive character since active learning, at least as far as organizational development is concerned, is a continuum for the future, for the change, and evolution.

3.1. Research sample to applicate active learning

Our research sample translates a finalist group, composed of 22 students (17 females and 5 males), with the age average of 22 years, from a higher education course of a higher institution published during the frequency of an Organizational Development signature from a HRM graduation on which active learning and O.D. techniques were applied. We also use communication instruments, such as e-mail and the social net “whatsapp”, for doing the work anytime and everywhere for the necessities, interests, and needs, and databases about O.D. techniques. For consultation and evaluation, consulting works and presentations, and measure, we used Excel and SPSS as instruments.

3.2. Results, discussion, and contributions in the field of higher education

According to what we observed, the active learning techniques with an average punctuation by the students are as follows:

1st: preparation for improvisation and ability to argue (42, 22)

2nd: teamwork (37)

3rd: exposition and communication (34)

4rd: preparation for the debate (22, 3)

5th: involvement in the activity (22)

6th: problem solver (21).

In a certain way, the students obtained good achievements with this, where we can say that the active learning is better than the classical techniques (expositive learning), they work in an interactive way, they prepare the studies, the meetings, and the presentations, working together, and made excellent projects. Nevertheless, we still continue to develop the techniques, because the students are not so good in argumentations and either in the commitment to the action or in the problem solving, where this last aspect concerns us since they are creative, and as we did not measure their creative profile, we cannot know what type are they. Supposedly, they seem as disseminators because they disseminate activities around the case ideas, and get things done adapting it to work discarding theories but not fitting the facts. They also try things out than thinking and try too many approaches till one is completely acceptable, but taking action is more difficult. So, maybe these are the truth, cause them main active learning profile is improvisators and wranglers, and together are team workers and communicators. The correlation with the main techniques is significative by applying the Pearson correlation as follows:

1st: preparation for improvisation and ability to argue:

- correlation with teamwork (, 867) and with exposition and communication (, 911).

2nd: team work:

- correlation with preparation for improvisation and ability to argue (, 867) and with exposition and communication (, 992).

3rd: exposition and communication:

- correlation with teamwork (, 992) and with preparation and ability to argue (, 911).

We had the privilege to verify, through the direct experience with the students, that the use of active learning is very useful to the students because this helps them to grow up their knowledge, and apply it in several determinated areas for their future, but more allows to increase their curiosity, essential competencies for the progress of personal knowledge, and increase the relationship between students and teachers, and working together with teams that provides live experiences in an interactive way evolving with the technology and creating it.

4. Conclusions and future trends

We think that active learning improves, essentially, the student's communication competencies and the mutual trust with each other. By another way, it establishes bridges between them to develop collective and individual attitudes to study, create, and offer solutions for work in better sharing utilities and facilities to win the challenges of tomorrow frontiers.

In future, active learning will give us more active students and teachers and models increasingly for online learning [52], gives us new devices for health and well-being [53], and provides feasible paths to obtain data resources through artificial intelligence [54] strategies for students to learn, study, and live with their own resources like service learning, metacognition, e-portfolios, open space dynamics, and e-team working [55]. This transition to the technology will help to extract more information that will be used as based for another type of learning it is an evolution process [56] that which climax is codification, by the subjects, critical thinking aspects, social and academic skills [57]. A good example of this is that the active learning will spread motivation, more and more, dealing and managing difficulties before the problems [58] increase in the way that people can develop the attitudes of curiosity and research to aim new answers from new questions [59]. In higher education, we will see active learning becoming an everyday life practice, where students exchange experiences, research approaches, and visit more degree programs [60], working and knowing better than ever, but each case is a case, and the knowledge world is very diverse, so what we know about the future? What we are waiting for? We hope this book may tell you!

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